Army Network Modernization

Network Modernization

The 2018 National Defense Authorization Act directed the Army to submit to the congressional defense committees a report on the Army strategy for "modernizing air-land ad-hoc, mobile tactical communications and data networks." The Chief of Staff of the Army developed a strategy intended to enable the Army to "fight tonight" while seeking technical solutions in order to modernize the Army's communications. The Army's strategy recognized that its network had not evolved to enable decisive action against a peer threat in a highly mobile and contested environment. To correct this, the Army seeks to pivot away from traditional acquisition by including non-developmental items and commercial off-the-shelf technologies with programs of record to build its tactical network.

The Army strategy created a process by which it experiments and learns about a broad array of technologies. The Army created the Network Cross-Functional Team (N-CFT) to augment traditional acquisition through rapid prototyping and experimentation. The N-CFT is a subordinate organization to the Army Futures Command, combining people, responsibilities, and funding from the requirements, research and development, and systems analysis communities. The N-CFT experimentation informs requirements and design for future acquisition programs. The Army has identified four primary lines of effort to modernize its tactical network:
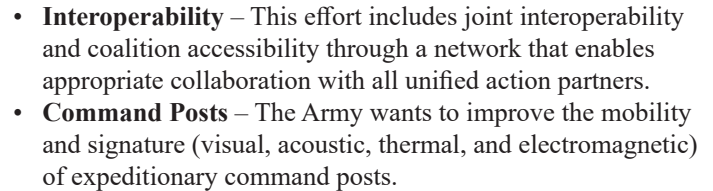
- **Unified Network** – This effort has three components: integrated tactical network, integrated enterprise network, and unified network-enabling capabilities. It includes the development of a standards-based network architecture that unifies enterprise and deployed network capabilities and features a unified transport layer, network operations, and other enabling functions that allow integration of disparate networks. A unified network could provide resiliency through path diversity and dynamic routing to ensure tactical units can communicate in hostile environments. A unified network is achievable as allied partners have successfully implemented a similar approach.
- **Common Operating Environment (COE)** – When complete, the Army intends for the COE to include a set of computing technologies, integrated data and databases, common graphics, and a unified set of mission command applications. It will rely on data standards and virtualization to provide browser-based access to mission command capabilities for at-the-halt and on-the-move leaders.

Unified Network

BCCS – Battle Command Common Services
COE – Common Operating Environment
CSI – Common Services Infrastructure
CTL – Common Transport Layer
I3MP – Installation Information Infrastructure Modernization Program
LTI – Lower Tactical Internet
UNO – Unified Network Operations
UTI – Upper Tactical Internet

Network as a Weapon System: Resilient and adaptable combination of applications, services and transport that *delivers information* at *the speed of maneuver* to the precise *point of need*

- **Interoperability** – This effort includes joint interoperability and coalition accessibility through a network that enables appropriate collaboration with all unified action partners.
- **Command Posts** – The Army wants to improve the mobility and signature (visual, acoustic, thermal, and electromagnetic) of expeditionary command posts.

Network Cross-Functional Team (N-CFT)

The N-CFT is working on several lines of effort in order to continue the Army's network modernization strategy. The N-CFT is developing requirements and systems to create a unified network for the Army to use. This includes efforts to develop and implement an architecture that will unify the tactical network; finding, developing, and demonstrating technologies to create this network; and the creation of requirements. The N-CFT defined a working term, the Integrated Tactical Network (ITN). The ITN is the suite of communications and networking hardware and software that provides voice and data communication capabilities to tactical units. It is the infrastructure necessary to support the current and future voice and data needs (namely mission command software).

The N-CFT conducted ITN experiments as a part of Network Integration Evaluation (NIE) 18.2. The NIE 18.2 provided an opportunity to observe the use of the ITN by a battalion (-) under operationally realistic conditions that included cyber and electronic warfare threats. The Army Test and Evaluation Command (ATEC) led a team that observed

the NIE and published a Capabilities and Limitations Report in January 2019. ATEC recommended continued development of power management options, and improvements in end-user device functionality, training, and troubleshooting. The report recommended that future testing of the ITN should include iterative cybersecurity and electronic warfare testing to find and fix deficiencies.

The Army Futures Command approved the ITN Modernization Abbreviated – Capability Development Document on May 31, 2019. This requirements document does not rigidly define the network in order to enable it to evolve over time as the Army identifies new technologies. The Army Acquisition Executive approved a rapid prototyping middle tier of acquisition (MTA) Acquisition Decision Memorandum in May 2019.

Army Network Strategy
The 2019 Senate Appropriations Report 115-290 directed the Army to submit to the congressional defense committees a "network acquisition roadmap" that addressed six objectives, a "test and evaluation plan," and a notification of "completion of cyber and vulnerability test and evaluation of the enabling [secure but unclassified] capabilities." The Senate Report required this of the Army prior to fielding any additional secure but unclassified systems to operational units after FY19. The Under Secretary of the Army submitted the Army Tactical Network Acquisition Strategy Roadmap on March 1, 2019, that detailed the acquisition roadmap. This document expanded upon the 2018 Army Network Modernization Strategy by including a more detailed description of the four lines of effort that compose the network strategy, specific ties to operational needs, and alignment of funding details.

The Army initiated a Capability Set acquisition and fielding model to modernize the network over time. Starting with Capability Set 21, the Army has a goal to modernize components within the four lines of effort to make the network more expeditionary and intuitive. Capability Set 21 includes existing fielded systems (i.e. Warfighter Information Network – Tactical), programs beginning full-rate production (i.e. Manpack and Leader Radio), and the MTA rapid prototyping systems. The MTA rapid prototyping effort will transition to a rapid fielding or program of record. The focus of Capability Set 21 is Infantry Brigade Combat Teams. The Army intends to field a new capability set every 2 years.

The Army submitted the ITN test and evaluation strategy to Congress in September 2019. The test and evaluation strategy supports the ITN rapid prototyping MTA program and the fielding decision for Capability Set 21. The capstone event of the test and evaluation strategy is a Soldier Touch Point with an infantry battalion during a field training exercise. DOT&E is engaged with the N-CFT and ATEC to develop a plan to collect the data required to support the development of the ITN requirements and the decision to field Capability Set 21. Follow-on strategies will be required for capability sets for FY23 and beyond.